

UNITED STATES DISTRICT COURT FOR THE
SOUTHERN DISTRICT OF ILLINOIS

UNITED STATES OF AMERICA,)	
)	
Plaintiff,)	Case Number: 05-CV-242 DRH
)	
v)	CJRA Track: C
)	
APEX OIL COMPANY, INC.,)	Hon. David R. Herndon
)	
Defendant.)	
)	

**REPLY IN SUPPORT OF
UNITED STATES' RENEWED
MOTION TO STRIKE TESTIMONY OF ERIC L. BUTLER**

Evidence presented at trial showed a complex dynamic of hydrocarbon contamination beneath North Hartford, including liquid, free-phase LNAPL floating on the groundwater and residual-phase hydrocarbons smeared into soils above. All the hydrocarbons, free-phase and residual-phase, volatilize into vapor-phase hydrocarbons. As hydrocarbon vapors move through the subsurface due to diffusion and advection, they mix with and displace other hydrocarbon vapors. Dr. Butler's opinions are fundamentally flawed in that he artificially attempts to segregate vapors generated by free-phase hydrocarbons from those produced by residual-phase hydrocarbons. Applying basic analytical techniques from which he draws disconnected and unsupported opinions, Dr. Butler rejects free-phase hydrocarbons as the source of the "dangerous levels" of hydrocarbon vapors currently found in near-surface soils. At trial he concluded, without having applied similar analyses – or indeed any analysis beyond process of elimination – that such hydrocarbon vapors must come from residual-phase contamination or

contemporaneous spills. Dr. Butler's opinions are unreliable, purely speculative, and should either be struck or granted no weight.

Opinion No. 6 is the foundation on which his overall opinions rely, in that it is the only opinion in which he states why the hydrocarbon vapors which he acknowledges are constantly volatilizing from the mass of free-phase hydrocarbons underlying much of North Hartford are not impacting near-surface soils. In Opinion No. 6, Dr. Butler asserted that "impermeable" clay layers preclude vapor migration from the subsurface to near-surface soils, as indicated by his review of geological cross-sections and the lack of near-surface odor notations in soil boring logs. This statement is set forth as support for his opinion that the spate of hydrocarbon-related fires and odor complaints in 1990 were due to a Shell Oil gasoline leak northeast of the Village (the "Rand Avenue Spill") and not vapors volatilizing from the free-phase LNAPL.

Apex Oil has now effectively abandoned Dr. Butler's reliance on "impermeable" clay barriers preventing vapor migration. In light of testimony from Apex Oil's other expert witness, Manu Sharma, that the term "impermeable" is a geological term of art meaning "low permeability" and not "zero" permeability, Defendant now implies that Dr. Butler knew that as well and also used "impermeable" in that manner.^{1/} Nor does Apex Oil deny that Dr. Butler inaccurately utilized boring log notations as evidence of the absence of hydrocarbon vapors in near-surface soils, but simply minimizes that portion of his testimony as only corroborative.

With the recognition that the silty-clay layers are in fact permeable, Opinion No. 6 now consists of nothing more than a leak of uncertain magnitude and a potential pathway into the

^{1/} As the dictionary defines impermeable to mean "impossible to penetrate" it would have behooved Dr. Butler to clarify this distinction for the layman. See American Heritage Dictionary 880 (4th ed. 2000).

Village. While these are relevant facts, without corroborating sampling data they hardly support an opinion that the Rand Avenue Spill was the sole source of the 1990 incidents at 119 West Date Street and elsewhere, let alone an extrapolation from those events that each of the more than 400 odor complaints registered over 40 years were due to contemporaneous petroleum spills and leaks.² Indeed, Dr. Butler acknowledged that he did not know the specific mechanics of how the material would have reached the affected homes -- he simply stated that there was a source, a potential pathway, and because there are “impermeable” clay barriers, the spill must be the sole source of the vapor intrusion events. Such simplistic, non-technical “analysis” does not satisfy the requirements of Rule 702.

With regard to Opinion Nos. 4 and 5, Apex Oil concedes that Dr. Butler did not have his vapor constituent ratio analysis corroborated by a reference standard or other measurable criteria, but stands pat on its belief that Dr. Butler’s judgment alone is sufficient -- despite the fact that Dr. Butler had never previously performed a similar vapor constituent ratio analysis and indeed had only worked with hydrocarbon vapors once before in his career. The journal articles cited by Apex Oil do not provide a methodology that supports Dr. Butler’s opinions. For the most

² The unreliability of Dr. Butler’s opinion is apparent from the simple fact that numerous vapor intrusion events have occurred at the same addresses before, during, and after the 1990 incidents. The home at 119 West Date Street suffered a hydrocarbon vapor-related fire in 1973 and explosive vapor concentrations in excess of 100% LEL were measured inside the residence in 1990 and in the sub-slab in 2007. See Pl. FOF ¶¶ 358-367. No concurrent hydrocarbon spills or leaks were identified for the 1973 or 2007 events.

The Rand Avenue Spill may well have contributed to conditions in Hartford, including the 1990 odor and fire events. This spill was a significant factor in the United States’ decision to seek Shell Oil’s participation in the Administrative Order on Consent. Shell Oil executed the AOC and has participated in the Hartford Working Group’s completion of numerous activities in accordance therewith. There is simply no basis, however, for Dr. Butler’s conclusion that the Rand Avenue Spill was the sole cause of the 1990 vapor intrusion incidents.

part the articles simply discuss the basic proposition that examination of soil-gas constituents can be used as a forensic tool for locating a source of hydrocarbons, not distinguishing between two or more potential sources of hydrocarbons or allocating the contribution of such sources to the hydrocarbon vapors.

Apex Oil claims that Dr. Butler's analysis is consistent with that described in Dr. Stout's paper, in that both compared constituent ratios of indoor air and subsurface vapor. Apex Oil, however, ignores the critical distinction between the two -- Dr. Stout did not exclude the subsurface vapor as the source of the indoor air in his example (despite constituent differences far greater than those found here), but rather used the constituent comparison as a screening tool for identifying the need for "[m]ore detailed chemical fingerprinting." The Stout article provides no information as to when constituent ratios would prove sufficiently distinct to support a conclusion that the subsurface vapor is not the source of the indoor air contamination.

Dr. Butler takes this screening level analysis and applies it to the complex conditions beneath the Hartford Community Center, where both free-phase and residual-phase hydrocarbons are present and where the ratios among constituent compounds in the sub-slab vapor samples varied widely from week-to-week. Dr. Butler not only concludes based on his inexperienced "judgment" alone that the constituent ratios of vapors from the free-phase are too dissimilar from that of the sub-slab samples for the free-phase to be their source, but further stated that residual-phase hydrocarbons or contemporaneous releases of hydrocarbons must therefore be the source of the extraordinary concentrations of hydrocarbon vapors found at the Community Center -- despite there having been no recent spills or leaks anywhere near the Community Center and Dr. Butler making no effort to calculate the theoretical composition of

vapors from residual-phase hydrocarbons as he did for the free-phase. Testimony excluding one potential source on the basis of subtle distinctions in vapor constituent ratios, while identifying another as the sole source of such vapors without having any idea as to the constituent ratios for vapors generated by it is simply unreliable and should be given no weight.

The insufficiency of Dr. Butler's Opinion No. 3 is twofold. Firstly, his correlative analysis of groundwater levels / rainfall against fires / odor complaints was superficial. More importantly, however, no basis is provided to support the alleged nexus between the purported results of his correlative analysis and his opinion. No literature is cited nor testimony provided as to why the alleged lack of a "direct" relationship among the factors should inform the Court that free-phase hydrocarbons on the groundwater are unrelated to hydrocarbon vapors infiltrating homes. Dr. Butler simply assumes without any supporting reference that, since free-phase hydrocarbons are a constant in the Hartford environment, the higher the groundwater or greater the rainfall, the more odor complaints there should be. While claiming to debunk prior assumptions, no earlier analysis presented such a simplistic model. The evidence presented at trial shows a complex dynamic leading to vapor intrusion, based on a number of environmental and man-made factors. Dr. Butler provides no basis for his assumption that a lack of correlation indicates that free-phase hydrocarbons are not a contributing source of odor complaints and, therefore, when he finds no such correlation, he has proven nothing. Dr. Butler's opinions are unreliable and should be struck or given no weight.

Signature page for *Reply in Support of United States' Renewed Motion to Strike Testimony of Eric L. Butler* filed in United States v. Apex Oil Co., Inc., Case No. 05-CV-242 (S.D. Ill.).

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_____/s Jeffrey A. Spector
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CERTIFICATE OF SERVICE

I, Jeffrey A. Spector, an attorney, hereby certify that on April 23, 2008, I electronically filed this *Reply in Support of United States' Renewed Motion to Strike Testimony of Eric L. Butler* with the Clerk of the Court using the CM/ECF system which will send notification of such filing to the following,

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